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The influence of personality and affect on nicotine dependence among male college students

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Many clinicians and researchers hypothesize that tobacco use disorders, regardless of the route of administration, are maintained by the ability of nicotine to regulate positive and negative mood states. The present study ($N = 137$) examined whether certain mood states predicted dependence on either cigarettes or smokeless tobacco and whether specific personality characteristics (e.g., extraversion, neuroticism, and psychoticism) mediated these relationships among young male college students. Results indicated that positive and negative moods predicted cigarette dependence (p values $= .01$) and that neuroticism partially mediated the relationship between positive affect and cigarette dependence. Exploratory analyses revealed that positive affect also interacted with neuroticism to predict smokeless tobacco dependence ($p = .04$). Simple effects analyses revealed that this relationship was maintained only among individuals high in neuroticism. Results suggested that dependence on cigarettes and smokeless tobacco among male college students may have different affective correlates and that certain personality characteristics may enhance and explain the effects of mood on tobacco dependence.

Introduction

Many people who regularly use tobacco products continue to have difficulty quitting even after intensive smoking treatment (Abrams, 1993; Hajeck, 1991; Hatsukami & Severson, 1999; The Tobacco Use and Dependence Clinical Practice Guideline Panel, Staff, and Consortium Representatives, 2000). It has been suggested that individuals who become dependent on tobacco products vary across several biobehavioral factors that impede the maintenance of nicotine abstinence (Shiffman, 1991). The identification and assessment of such individual difference factors may help in the development of more efficacious treatment options in the future (Shiffman, 1993; The Tobacco Use and Dependence Clinical Practice Guideline Panel, Staff, and Consortium Representatives, 2000).

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Compulsive tobacco use has been conceptualized as an addictive process reinforced by repeated exposure to nicotine (Jaffe, 1990; West, 1988). Although other explanations of reinforcement have been put forth (Landrine, Richardson, Klonoff, & Flay, 1994), tobacco use is believed to be maintained because nicotine modulates various neurotransmitter systems (e.g., dopamine, serotonin, acetylcholine, glutamate) associated with the production of desirable positive mood states (Pomerleau & Pomerleau, 1992; Watkins, Koob, & Markou, 2000) or the alleviation of undesirable negative mood states (Carmody, 1992; Hall, Munoz, Reus, & Sees, 1993).

To date, the influence of mood on tobacco use disorders has been studied primarily among individuals who smoke cigarettes. Less is known about individuals who use smokeless tobacco. Nevertheless, many researchers assume that the contribution of affect on the maintenance of tobacco use behavior is the same for smokeless tobacco users as it is for cigarette smokers. For example, studies that examine the motives of cigarette smokers and smokeless tobacco users report that the management of emotions is one of the most important reasons for continued use of tobacco for both groups (Spielberger, Foreyt, Reheiser, & Poston, 1998). Situations that evoke negative moods also have been shown to be strongly

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associated with cigarette smoking (Spielberger & Jacobs, 1982) and smokeless tobacco use (Hatsukami & Severson, 1999).

Other studies have suggested that biological and psychological predispositions, such as personality traits, may help explain the influence of mood on tobacco use disorders (Gilbert & Gilbert, 1995; Lerman et al., 1998; Pomerleau, 1995; Robinson & Berridge, 2000). For decades, many personality theories have emphasized how traits influence affective experiences throughout one's lifespan (Ekman, 1984; Izard, 1977; Malatesta & Wilson, 1988; Plutchik, 1980; Tellegen, 1985; Tomkins & McCarter, 1964). Although research has yet to identify which personality characteristic best predicts tobacco use, studies have shown that neuroticism, extraversion, and psychoticism each exert some influence on tobacco use (Canals, Blade, & Domenech, 1997; Eysenck, Tarrant, Woolf, & England, 1960; Gilbert & Gilbert, 1995; Pritchard & Kay, 1993; Spielberger & Jacobs, 1982). For example, studies have shown that, among cigarette smokers, neuroticism was an important predictor of craving following the pharmacological manipulation of the dopamine system (Reuter & Netter, 2001). Moreover, smokeless tobacco users, particularly those who reported occasional use, had higher scores in extraversion (Spielberger, Foreyt, Goodrick, & Reheiser, 1995; Spielberger, Reiheiser, Carlos, & Foreyt, 2000). When smokeless tobacco users were compared with cigarette smokers, both groups were shown to be high in psychoticism, whereas cigarette smokers also were high in neuroticism and suppressed anger and low in trait curiosity (Spielberger et al., 1995). Whether personality characteristics explain the influence of mood on tobacco use and dependence remains unclear.

Based on the findings from prior research suggesting that mood states predict cigarette smoking (Spielberger et al., 1998) and smokeless tobacco use (Foreyt et al., 1997), the present study tested the hypothesis that negative and positive moods predict nicotine dependence among tobacco-using undergraduates. The present study also examined whether personality mediates the relationship between affect and nicotine dependence. Although the personality variables that may explain the relationship between mood and dependence are unclear, findings from prior research may lead one to expect neuroticism to act as a mediator among the analyses examining dependence on cigarettes and extraversion to exert mediation effects among the analyses examining dependence on smokeless tobacco.

Method

Participants

A total of 137 male undergraduate psychology students, all of whom reported using one or more tobacco products, participated in the present study to fulfill course requirements (Table 1). Given estimates indicating that males aged 12 years or older are 10 times more likely than their female counterparts to report current use of smokeless tobacco (i.e., 6.5% of males vs. .5% of females) (Substance Abuse and Mental Health Services Administration, 2001), the participant sample was restricted to male volunteers. On average, participants were 19 years old (median = 19 years). The sample was 88.4% White, 6.5% Hispanic, .7% Black, .7% Native American, and 3% "Other." Of the 137 participants, 83 reported smoking only cigarettes, 24 reported using only smokeless tobacco, and 30 reported use of both cigarettes and smokeless tobacco. The dual users were included in both the cigarette and the smokeless tobacco dependence analyses. On average, the participants reported smoking more than 4 days per week ($M = 4.75$, $SD = 2.57$). During each day that participants reported smoking cigarettes, 59.2% reported smoking 5 or fewer cigarettes, 14.8% reported smoking 6–10 cigarettes, 12.8% reported smoking 11–20 cigarettes, and 13.2% reported smoking 20 or more. Those who used only smokeless tobacco reported chewing approximately 6 days per week ($M = 5.91$, $SD = 1.44$), and dual users reported chewing close to 4 days each week ($M = 3.67$, $SD = 2.56$). Finally, smokeless tobacco users reported using an average of 2.87 tins per week ($SD = 1.57$), and dual users reported using an average of 2.21 tins per week ($SD = 2.56$).

Measures

Cigarette dependence. Cigarette dependence was assessed using the Fagerström Test for Nicotine Dependence (FTND; Heatherton, Kozlowski, Frecker, & Fagerström, 1991). The FTND measures symptoms of nicotine dependence on a six-item scale. Potential scores on the FTND range from 0 to 10; higher scores indicate greater dependence. The FTND exhibits moderate internal consistency (Cronbach's

Table 1. Demographic and nicotine use characteristics ($N = 137$).

Variable	Mean	*SD*	Range
FTND score	2.76	2.61	0–10
MFST score	1.31	1.54	0–6
Extraversion	12.69	2.72	6–30
Neuroticism	10.42	5.21	1–40
Psychoticism	5.47	1.54	2–14
Negative affect	15.14	5.85	10–40
Positive affect	26.84	8.46	10–50
Negative affect	23.10	22.22	0–113
Vigor	15.04	6.29	1–32

FTND, Fagerström Test for Nicotine Dependence; MFST, Modified FTND for Smokeless Tobacco Users.

$\alpha = .64$ and .58, respectively) and construct validity (Pomerleau, Carton, Lutzke, Flessland, & Pomerleau, 1994).

Smokeless tobacco dependence. Smokeless tobacco dependence was measured via a Modified FTND for Smokeless Tobacco Users (MFST; Boyle, Jensen, Hatsukami, & Severson, 1995). The MFST examines five items that assess patterns of smokeless tobacco use, ability to refrain from smokeless tobacco, and the rate of smokeless tobacco use. Potential scores on the MFST range from 0 to 10 with higher scores reflecting greater smokeless tobacco dependence. Although reported coefficient alphas for the MFST are relatively low (e.g., .55, .51) (Boyle et al., 1995), such results are sometimes found among nicotine dependence scales (Lichtenstein & Mermelstein, 1986).

Positive affect. Positive affect was assessed throughout the study via two subjective measures of mood: The vigor subscale of the Profile of Mood States (POMS) questionnaire (McNair, Lorr, & Droppleman, 1971) and the positive affect subscale of the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). Although the POMS and PANAS are highly intercorrelated, the POMS vigor subscale and the PANAS positive affect subscale measure different components of positive affect. Specifically, the vigor subscale measures activated positive mood states (e.g., full of pep, vigorous, energetic, active), whereas the positive affect subscale includes many descriptors that tap into low-activation positive mood states (e.g., proud, strong, determined, interested). As suggested by Watson and Tellegen (1985), high-activation positive mood states and low-activation positive mood states are different types of emotions that have different psychological and behavioral correlates. Both measures were included because little is known about the how positive affect influences nicotine dependence.

The POMS is a self-report mood questionnaire consisting of 65 adjectives rated on a five-point Likert scale ranging from 0 (not at all) to 4 (extremely) (McNair et al., 1971). The "right now" version was used to characterize the participant's mood at the time of testing. The POMS vigor subscale assessed high-activation positive mood states, by measuring moods such as peppiness, elation, and vigor. Potential scores for this subscale range from 0 to 32; higher scores indicate higher levels of vigor. The vigor-activity subscale has an internal consistency reliability of .90 and shows evidence of both construct and predictive validity (McNair et al., 1971).

Positive affect also was measured via the PANAS, given that it measures lower activation positive mood states (e.g., strong, proud, interested). Study participants rated the extent to which each word described the way they felt at the moment of testing on a five-point Likert scale (1 = very slightly or not at all, 5 = extremely). The positive affect scale consists of 10 items, with potential scores ranging from 10 to 50. Higher scores on the positive affect scale indicate higher levels of positive affect. The positive affect scale had high internal consistency ($\alpha = .87$) among a sample of adults (Watson et al., 1988).

Negative affect. Negative affect was assessed throughout the study via two subjective measures of mood: The negative affect subscale of the POMS (McNair et al., 1971) and the negative affect subscale of the PANAS (Watson et al., 1988). The "right now" version of the POMS was used to characterize the participant's mood at the time of testing. Negative affect, encompassing feelings of distress, hostility, nervousness, scorn, and gloominess (Watson & Tellegen, 1985), was measured by the POMS negative affect subscale, derived by summing the subscale scores for tension, depression, and anger. Potential negative affect scores range from 0 and 144; higher scores indicate higher levels of negative affect. The negative subscale has an internal consistency reliability of .90 and evidences construct and predictive validity (McNair et al., 1971).

The negative affect subscale of the PANAS was used to derive a measure of negative affect. The negative affect scale comprises 10 words, with scores ranging from 10 to 50. Higher scores indicate higher levels of negative affect. The negative affect scale had high internal consistency ($\alpha = .84$) in a sample of adults (Watson et al., 1988).

Personality. Extraversion, neuroticism, and psychoticism were measured using the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975). The EPQ contains 90 true-false items and yields scores on the three dimensions of Eysenck's personality theory: Extraversion, neuroticism, and psychoticism. The EPQ shows satisfactory split-half reliability (Eysenck & Eysenck, 1975).

Stage of change. Dependence and withdrawal may differ among individuals across levels of motivation to quit (Prokhorov et al., 2001). As a result, the contemplation ladder (Biener & Abrams, 1991) was administered to assess nicotine users' position on a continuum ranging from having no thoughts of quitting to being engaged in action to change one's smoking behavior. The five stages of readiness on the contemplation ladder, which correspond with the stages of change model (Prochaska, DiClemente, & Norcross 1992) are as follows: "No thought of quitting," "Think I need to consider quitting someday,"

"Thinking I should quit but not quite ready," "Starting to think about how to change my tobacco use patterns," and "Taking action to quit" (e.g., cutting down, enrolling in a program). The contemplation ladder has both concurrent and predictive validity (Biener & Abrams, 1991).

Social desirability. Social desirability was assessed to control for demand characteristics produced by the study's quasi-experimental design (i.e., using self-report only) (Wilkerson, Nagao, & Martin, 2002). The social desirability measure used in the present study originates from the social acceptance vs. social intolerance subscale of the Temperament and Character Inventory (TCI; Cloninger, Pryzbeck, Svrakic, & Wetzel, 1994). The internal consistencies of the TCI subscales have been shown to be high (Cloninger et al., 1994).

Procedures

Informed consent was obtained independently from all participants prior to their entry into the study. Potential participants signed up for 2-hr assessment sessions held twice weekly in groups of 15 to 20; each participant was awarded course credit for his participation. Assessment sessions occurred between 11.00 and 16.00 hr. To reduce order effects, questionnaire packets were counterbalanced in terms of the order in which each measure appeared in the packet. No identifiable information appeared on the questionnaire packets.

Results

Hierarchical regression analyses were conducted to examine the study hypotheses. First, Pearson correlations were conducted to examine correlations among study variables (Table 2). Correlation analyses showed that stage of readiness to quit using tobacco was significantly correlated with FTND and negative affect, whereas social desirability was significantly associated with negative affect. Thus, both stage of readiness to quit using tobacco and social desirability were statistically controlled in all analyses.

Positive mood and nicotine dependence (MFST and FTND)

The first hypothesis was that current positive mood states would predict smokeless tobacco and cigarette dependence. Hierarchical regression analysis showed that the positive affect (PANAS) subscale predicted 6% of the variance in cigarette dependence, after we controlled for stage of change and social desirability, R^2 change = .06, $\beta = -.24$, $F(1, 100) = 7.13$, $p = .01$. Variance in smokeless tobacco dependence, however, was not predicted by the positive affect subscale, $F(1, 49) = 1.11$, $p = .30$. Likewise, vigor (POMS) did not predict significant variance in FTND scores, $F(1,99) = 2.97$, $p = .09$, or MFST scores, $F(1,47) = .16$, $p = .69$, after we controlled for covariates.

Negative mood and nicotine dependence (MFST and FTND)

The second hypothesis was that current negative mood states would predict dependence on smokeless tobacco and cigarettes. Hierarchical regression analysis showed that negative affect (POMS) accounted for 7% of the variance in cigarette dependence, after we controlled for social desirability and stage of change, R^2 change = .07, $\beta = .26$, $F(1, 99) = 8.48$, $p = .01$. A subsequent hierarchical regression analysis showed that POMS negative affect did not predict dependence on smokeless tobacco, $F(1, 49) = .09$, $p = .76$. Likewise, the negative affect subscale (PANAS) did not predict significant variance in FTND scores, $F(1,100) = 1.79$, $p = .18$, or MFST scores, $F(1, 49) = 2.80$, $p = .60$, after we controlled for covariates.

Table 2. Intercorrelations among baseline predictor variables and criterion variables ($N = 137$).

	1	2	3	4	5	6	7	8	9	10	11	12
FTND	–											
MFST	.20	–										
Positive affect	−.26*	–										
Negative affect	.09	.05	−.14	–								
Vigor	−.21*	.02	.57**	−.20*	–							
Dysphoria	.26*	.04	−.27**	.69**	−.36**	–						
Extraversion	.12	.02	.16*	.01	.14	−.09	–					
Neuroticism	.25**	.04	−.23**	.42**	−.32**	.51**	.09	–				
Psychoticism	−.02	−.04	.11	.10	.01	.06	.14	.34**	–			
Stage of change (smoking)	−.32*	.44**	.03	.05	.06	−.01	−.12	−.01	−.05	–		
Stage of change (smokeless)	–	−.22	−.07	−.23*	−.04	−.17	−.13	−.18	−.17	.40*	–	
Social desirability	.10	−.10	−.01	.16*	−.08	.09	.24**	.01	.02	−.18*	−.31*	

FTND, Fagerström Test for Nicotine Dependence; MFST, Modified FTND for Smokeless Tobacco Users.
**$p < .01$, *$p < .05$, one-tailed.

Overall, positive affect and negative affect predicted significant changes in dependence on cigarettes, after we controlled for covariates. Next, we examined whether personality variables would mediate the effects of positive affect and negative affect on cigarette dependence. Given that only neuroticism was significantly correlated with positive affect, negative affect, and FTND scores and that extraversion and psychoticism did not show the significant zero-order correlations to warrant viability as a potential mediator (Table 2), the first set of analyses tested whether neuroticism mediated the influence of positive affect and negative affect on cigarette dependence.

Positive affect and cigarette dependence: Partial mediation by neuroticism

Hierarchical regression analysis tested whether neuroticism mediated the relationship between positive moods and dependence on cigarettes. Using criteria set by Baron and Kenny (1986), we examined whether (a) positive affect predicted FTND, (b) positive affect predicted the mediator (neuroticism), and (c) only neuroticism significantly predicted dependence on cigarettes, when neuroticism and positive affect were placed on the same regression step. As shown above, positive affect predicted significant variance in dependence on cigarettes. Next, hierarchical regression analysis, after we controlled for covariates, showed that positive affect significantly predicted neuroticism, R^2 change = .06, $\beta = -.24$, $F(1, 100) = 6.32$, $p = .01$. When neuroticism and positive affect were entered into the same step of the regression equation, after we controlled for covariates, both positive affect, $\beta = -.18$, $p = .04$, and neuroticism, $\beta = .19$, $p = .03$, predicted significant additional variance in FTND scores. Results suggested that neuroticism partially mediated the relationship between positive affect and level of dependence on cigarettes (Baron & Kenny, 1986). Although the influence of positive affect on cigarette dependence remained significant, the observed reduction in beta weight and alpha value suggested partial mediation (Baron & Kenny, 1986).

Negative affect and cigarette dependence: Lack of mediation by neuroticism

Hierarchical regression analysis also tested whether neuroticism mediated the relationship between negative affect and dependence on cigarettes. As shown above, negative affect predicted significant variance in dependence on cigarettes. Next, hierarchical regression analysis, after we controlled for covariates, showed that negative affect significantly predicted neuroticism, R^2 change = .29, $\beta = .54$, $F(1, 98) = 39.86$, $p = .01$. When neuroticism and negative affect were entered into the same step of the regression equation after controlling for covariates, neither predicted significant additional variance in FTND scores (p values = .25 and .08, respectively). Results suggested that neuroticism did not mediate the relationship between negative affect and dependence on cigarettes (Baron & Kenny, 1986).

Exploratory analysis: Neuroticism moderates the influence of positive moods on smokeless tobacco dependence

The partial mediation of positive affect and cigarette smoking by neuroticism illustrated the influence of neuroticism on nicotine dependence via a positive affect pathway. Because moderation effects are most desirable when an unexpectedly weak relationship exists between predictor and criterion variables (Baron & Kenny, 1986), we conducted an exploratory analysis that tested whether neuroticism would moderate positive affect to influence smokeless tobacco dependence. Again, using the criteria established by Baron and Kenny (1986), we first examined whether the moderator variable (positive affect × neuroticism) predicted significant variance in smokeless dependence after controlling for the main effects of positive affect and neuroticism. Specifically, hierarchical regression analysis showed that, after we controlled for covariates, current positive moods, and neuroticism, the moderator variable (positive affect × neuroticism) explained 7% of the variance in smokeless dependence, R^2 change = .07, $F(1, 47) = 4.17$, $p = .04$. Simple effects were conducted with two separate regression analyses that examined the relationship between positive affect and smokeless tobacco dependence first among individuals with high levels of neuroticism only and then among individuals with low levels of neuroticism. Results showed that current positive mood was predictive of smokeless dependence among those with high levels of neuroticism, R^2 change = .14, $F(1, 25) = 4.29$, $p = .04$, but not among those with low levels of neuroticism, $F(1, 20) = .48$, $p = .50$. Thus, neuroticism appeared to interact with positive mood states such that only among those with high neuroticism did positive affect predict dependence on smokeless tobacco.

Discussion

Our findings illustrated the importance of testing individual difference factors when examining the nature of the relationship between affect and nicotine dependence among a young college student population that reported varying tobacco use histories. After controlling for stage of change and social desirability, we found that lower levels of positive affect and higher levels of negative affect predicted dependence

on cigarettes but not on smokeless tobacco. The results from this study provide evidence that neuroticism partially mediated the negative relationship between positive affect and cigarette dependence. Exploratory analyses also found that neuroticism moderated the influence of positive affect on smokeless tobacco dependence. Specifically, simple effects tests revealed a significant negative relationship between positive affect and smokeless tobacco dependence among highly neurotic individuals and not among individuals with low levels of neuroticism.

To our knowledge, the present study may be the first to examine the influence of personality on the relationship between affect and different types of nicotine dependence. By doing so, we have attempted to characterize biobehavioral factors associated with cigarette dependence and smokeless tobacco dependence. Our results indicated that positive affect and dysphoria predicted cigarette dependence among male undergraduates. In fact, young smokers without extensive histories of cigarette smoking may very well continue to smoke because nicotine elevates their positive moods (Lipkus, Barefoot, Williams, & Siegler, 1994) and reduces feelings of negative affect (Breslau, 1995; Escobedo, Kirch, & Anda, 1996; Gilbert & Wesler, 1989). Interestingly, neuroticism explained the influence of positive affect, but not negative affect, on cigarette dependence. Historically, neurotic smokers were presumed to become dependent on nicotine because of its ability to ameliorate their frequent and persistence bouts of unpleasant moods (Gilbert & Gilbert, 1995). Our results, however, suggested that this vulnerability may drive male smokers toward behaviors that evoke or ameliorate presumed deficits in positive affect.

With respect to individuals who use smokeless tobacco, low levels of positive affect also appear to influence smokeless tobacco dependence among individuals with high levels of neuroticism. Consistent with previous research (Spielberger et al., 1998), smokeless tobacco users may become dependent on nicotine because they achieve some level of enjoyment or pleasure from its use. The present study provided preliminary data suggesting that smokeless tobacco users chew for enjoyment purposes. In fact, young male neurotic smokeless tobacco users may chew tobacco because they have difficulty experiencing enjoyment or pleasure during situations that are naturally rewarding to others. In other words, smokeless tobacco may ameliorate such deficits in pleasure.

Given that neuroticism heightens negative mood states during short-term abstinence (Breslau, Kilbey, & Andreski, 1992; Gilbert et al., 1998; Gilbert et al., 2002), but typically does not have an effect on positive mood states measured by POMS vigor scores (Gilbert et al., 1998), one might expect that temporary abstinence effects could influence the present findings during the 2-hr testing period. Contrary to this supposition, however, low levels of positive affect rather than elevated negative affect influenced the relationship between neuroticism and nicotine dependence. Hence, our findings were more consistent with prequit correlates that showed neuroticism positively correlated with depression and tension and negatively correlated with vigor (Gilbert et al., 1998). These data suggested that participants in the present study may not have experienced substantial symptoms of nicotine withdrawal that would have influenced the results.

An overall speculative interpretation of our data is that the effect of neuroticism on the negative relationship between positive affect and nicotine dependence among male cigarette smokers and smokeless tobacco users may support a depressive vulnerability hypothesis of nicotine dependence. Although it is unclear whether nicotine use increases an individual's risk of experiencing depression (Balfour & Ridley, 2000) or whether it is a reaction to a depressive vulnerability (Glassman et al., 1988), data from this study appear to support the idea that young neurotic males who experience deficits in positive affect may use nicotine to buffer their risk of depression or to ameliorate neurobiological substrates that may predispose them to depression. This possibility is consistent with the view that neuroticism is a precursor to depression (Jorm et al., 2000). Additionally, a deficiency in positive affect by itself or in combination with elevated negative affect is viewed as the key ingredient to clinically significant depression (Clark & Watson, 1991; Coyne, 1994). As such, it may be reasonable to assume that the combination of neuroticism and low positive affect reflect a proxy for a depressive vulnerability among young tobacco-using males. Nevertheless, the depressive vulnerability hypothesis is tenuous at best and should be evaluated more rigorously in future studies.

Despite the encouraging results, the present study had a number of limitations. For example, results were based on a small sample of male college students. Thus, the extent to which these findings can be generalized to female or older individuals who have used tobacco products for a longer period of time has not been determined. The relatively low dependence levels observed between cigarette and smokeless tobacco users also limits generalizability to populations showing higher levels of nicotine dependence. Given the nature of the results (e.g., correlational), we cannot infer causality. That is, an individual with specific personality characteristics or with a propensity to experience low positive or elevated negative affect will not necessarily become dependent on a product containing tobacco. In addition, questionnaires were disseminated between 11.00 and 16.00 hr. Time of day may have interacted with the influence of personality variables on mood and dependence. Also, mood measures were momentary and situation specific

(measured at one time point). Given that mood is influenced by a variety of environmental stimuli, it is unclear whether these relationships would be witnessed in other situations.

In conclusion, results from the present study indicated that a distinct relationship exists between affective states and nicotine dependence among male college students. Furthermore, neuroticism was shown to exert some influence on these relationships. However, because data were collected at one time point and participants consisted of individuals with varying patterns of tobacco use, our results are preliminary at best. Future research should examine these hypotheses longitudinally and among individuals with homogeneous tobacco use patterns.

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